

Statement	T or F
A solvent like water can dissolve an unlimited amount of solute.	
Immiscible materials are substances that are mutually soluble, like H <sub>2</sub> O and CH <sub>3</sub> OH.	
Water is a nonpolar molecule and is a good solvent for ionic and polar solutes.	
Temperature increases usually increase the solubility of a solid substance in water.	
Gas solubility in water decreases when the temperature goes up.	
When the pressure of a gas over water is raised, the gas solubility increases.	
A saturated solution can dissolve more solute.	
Polar substances do not dissolve well in water.	
Ionic substances dissolve to form electrically conducting solutions.	
There is no such thing as a "supersaturated" solution.	
According to the solubility graph, $\approx 79$ g NaNO <sub>3</sub> will dissolve in 100 mL of water at 10°C.	
100 mL of KCl solution at 50 °C has 10 grams. This solution is unsaturated.	
Hydronium ions are hydrated hydrogen ions.	
For nonelectrolytes, the complete molecule goes into solution.	
The ions in a solution that make up the precipitate <i>spectator ions</i> .	
A nonpolar solvent will dissolve a polar solute.	
Dissociation is the separation of ions that occurs when ionic compounds dissolve in water.	
Stirring the solution will help to increase the rate at which a solid will dissolve in a liquid	
Powdering the solid will help to increase the rate at which a solid will dissolve in a liquid.	
Heating the solvent will help to increase the rate at which a solid will dissolve in a liquid	
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Pressure has very little effect on solid/liquid solutions.	
Gas/liquid solutions respond very easily to changes in pressure.	
Concentrated means a large amount of solute in the solution	
Solubility is the maximum amount of solute that can dissolve in a given amount of solvent under certain conditions.	
Generally polar solute molecules will dissolve in nonpolar solvents.	
An aerosol is a colloid of fine solid particles or liquid droplets in a gas such as clouds.	
Foam is a substance that is formed by trapping pockets of gas in a liquid or solid.	
A beam of light or laser light will not trace a visible path through a true solution	
A general rule applied to solute-solvent relationships goes like this: " Like dissolves like"	
Water is the universal solvent.	
The solubility of a gas increases as the temperature of the solvent increases.	
Temperature has no affect on solubility in liquid/liquid solutions.	
When a solute is dissolved into a solvent, the boiling point of the solvent is raised.	
Bp and fp changes are directly proportional to the molal concentration.	
The addition of a solute in water will lower the freezing point below 0°	

## Problems:

1. How many grams of NaCl will dissolve in 300 mL of water at 45 °C?
2. How many grams of CsCl will precipitate out of solution if the solution is cooled from 35°C to 10°C?
3. What is the molality of a solution that has 7 moles of KCl in 2100 g of water?

4. How many grams of NaOH are needed to make a 1.7 m solution with 1600 grams of water?
5. What is the molarity of a solution that has 7 moles of LiCl in 3600 mL of solution?
6. How many grams of KI are needed to make 1400 mL of 1.5 M solution?
7. How many grams of solute are in 1500 grams of a 8.50% solution?
8. What is the boiling point of a 0.67 molal solution of  $\text{H}_3\text{PO}_4$ ?
9. Calculate the molecular weight of butyl alcohol, 18.5 grams of which dissolves in 750 grams of water to produce a solution having a freezing point of  $-0.62\text{ }^\circ\text{C}$